

Clean Thai Biogas Plant

Location: Countrywide
Type: Biogas plant at cassava processing facility
Size: 550 tons per day of cassava starch
Funding: Total: US\$1,850,000
 Private: US\$1,585,000
 Public: US\$265,000
Objective: To convert waste into methane to reduce heavy fuel oil and electricity consumption.
Duration: 2001–2002
Scale: Rural

Summary

A Thai-based company has designed and is installing an anaerobic biodigester to convert organic-rich wastewater from a cassava processing plant into methane. The plant will save money by avoiding the costs of purchasing heavy fuel oil and electricity. The project will also reclaim dozens of acres of land that were previously used to purify the factory's wastewater. In addition, the project is expected to generate several hundred tons of carbon offsets per year.

In-Country Principles That Attracted Nondonor Financing

- Capacity building and informed decision making

The key principle in attracting private-sector financing was a successful energy restructuring, which included the creation of comprehensive legal and regulatory reform.

Another important factor was that the Thai Bureau of Investments approved the project for tax incentives and other



privileges provided to businesses willing to work in economically depressed regions of the country.

Financing

Total project investment was US\$1,850,000. Of this, the private sector contributed more than 85%. Private sources included Al Tassar Energy and the Renewable Energy and Energy Efficiency Fund (REEF).

A short-term loan from E+Co. allowed completion of the feasibility evaluation and the preparation of investment documents necessary for attracting additional investment.

Equity sources included foreign utilities, multilaterals, and insurance agencies. Local debt in Thailand is difficult to access, and it is hoped that as Clean Thai's projects build a track record, local debt availability will increase.

The Project

Clean Thai is a Thai-based company that specializes in the production of biogas from agricultural and process waste streams. It established this project to finance, construct, operate, and maintain a biodigester power plant at a cassava processing plant. The plant produces more than 500 tons per day of cassava starch, and, prior to the project, it consumed US\$2,300,000 in electricity and US\$2,200,000 in heavy fuel oil costs per year.

With this project, the waste from the plant will operate an anaerobic digestion system that will produce enough biogas to replace significant portions of the facility's heavy oil and electricity needs.

Commercial, residential, and agricultural sectors will benefit from the project. By utilizing an anaerobic digestion system, organic matter decomposes in a contained environment, thus virtually eliminating odor and pest issues caused by large-scale decomposition of organic material for residents close to the site.

As Clean Thai grows as a project developer, each additional anaerobic digestion system that it installs will provide similar environmental benefits.

Technical Data

The technology used is methane collection, powered by four gas boilers. The methane is generated through an anaerobic digestion process using cassava-rich wastewater.

Performance Data

At this writing, the project is under construction, so performance data are not available. However, it is estimated that the methane generated from the project will displace tens of thousands of barrels of heavy fuel oil per year, replacing 100% of its heavy oil needs and 75% of its electricity needs (which are currently purchased from the grid.)

Estimated carbon offsets are 315,000 tons per year.

The project is projected to save the cassava processing factory hundreds of thousands of dollars in operating expenses each year.

Four to six people have been trained in the construction and ongoing maintenance of anaerobic digestion systems.

Participants and Roles

Clean Thai developed the project, and REEF, a renewable energy equity fund, and Al Taysar Energy, a private energy investment fund based in Abu Dhabi, provided financing for the project. E+Co. provided a short-term loan at the early stage, which helped attract second-stage capital.

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